

# Analysis of H<sub>2</sub>-Antagonist Drugs by HPLC

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## Abstract

The antiulcerative drugs cimetidine and ranitidine are used in treatment of gastritis and stomach ulcers. They are histamine H<sub>2</sub>-receptor antagonists which inhibit the gastric acid secretion.

Figure 1 shows the HPLC separation of cimetidine and ranitidine using isocratic analysis on a reversed phase column and UV detection. The autosampler temperature was set to 4 °C to avoid decomposition of the samples.

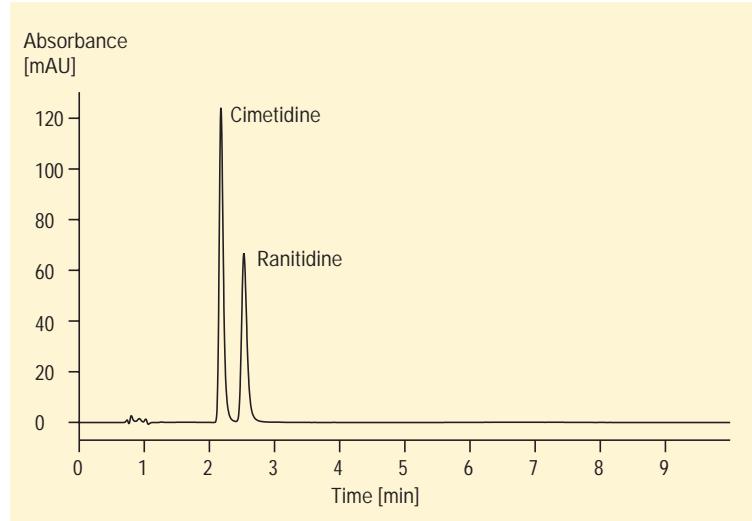


Figure 1  
Analysis of cimetidine and ranitidine

## Conditions

### Column

4.6 x 75 mm Zorbax SB-C18 3.5 µm

### Mobile phase

A = 0.025 M KH<sub>2</sub>PO<sub>4</sub> in water  
(pH = 3 with H<sub>2</sub>SO<sub>4</sub>)

B = acetonitrile

### Flow rate

1.0 ml/min

### Isocratic

8 % B for 10 min

### UV detector

variable wavelength detector  
225 nm, standard cell

### Column compartment temperature

25 °C

### Stop time

10 min

### Injection volume

5 µl



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The performance of the HPLC method is shown in the table below.

Compound	LOD for S/N=2 (mg/l)*	Precision of RT (RSD of 10 runs) (100 mg/l)*	Precision of Area (RSD of 10 runs) (100 mg/l)*
Cimetidine	0.2	0.08	0.67
Ranitidine	0.2	0.08	0.49

\* Injection volume: 5  $\mu$ l

The HPLC method presented here shows an easy but reliable and precise analysis of the  $H_2$ -antagonist drugs cimetidine and ranitidine. The values for LOD, precision of RT and precision of area show the good performance of the analysis.

## Equipment

### Agilent 1100 Series

- Quaternary pump (includes vacuum degasser)
- Thermostatted autosampler
- Thermostatted column compartment
- Variable wavelength detector, standard flow cell, 10-mm path length, 13- $\mu$ l cell volume

### Alternative:

- Vacuum degasser
- Binary pump
- Diode-array detector, standard flow cell 10-mm path length, 13- $\mu$ l cell volume
- Agilent ChemStation + 3D software

### Columns

- Zorbax SB-C18, 3.5  $\mu$ m, 4.6 x 75 mm (Agilent part number 866953-902)
- Recommended: Guard cartridges Zorbax SB-C18, 5  $\mu$ m, 4.6 x 12.5 mm (Agilent part number 820950-920, 4/pk)

### Note:

Since the method was specifically developed on the Agilent 1100 Series system you might not be able to reproduce this analysis on an older system or even on a new system with lower performance. To avoid sample decomposition it is necessary to use a cooled autosampler, for example, the Agilent 1100 Series thermostatted autosampler.

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